Introduction

Obesity has been an epidemic in the United States for more than two decades, and the proportion of overweight and obese adults in the population continues to grow. Results from the 2005-2006 National Health and Nutrition Examination Survey (NHANES), using measured heights and weights, indicate that an estimated 32.7% of US adults 20 years and older are overweight, 34.3% are obese, and 5.9% are extremely obese (BMI ≥ 40 kg/m²). A recent study investigated the role of obesity and obesity in carcinogenesis. They reported that women with the highest BMI of 40 kg/m² had death rates from all cancers combined that were 62% higher for women (with relative risk of death of 1.62) than the rates in women of normal weight. They reported a significant trend of increasing risk with higher BMI for death in women from cancers of the breast, uterine, cervix, and ovary.

Methods

Forty-three six-week-old obese female Zucker rats were used. Rats were randomly assigned and had ad libitum access to water and a diet of either chow (2016) as a control diet or chow with the addition of DHEA at a concentration of 6 g/kg as a DHEA diet. All rats were orally gavaged at age 50 days with 65 mg DMBA/kg body weight and were sacrificed 155 days post DMBA treatment. Livers were evaluated for presence of micro- and macrosteatosis, inflammatory infiltrates, and fibrosis. The percentage of liver cells showing fat accumulation was estimated. A score of 1 to 4 was given to each section, reflecting the relative degree of steatosis in hepatocytes. A score of 1 (<25%), 2 (25%-50%), 3 (51%-75%), and 4 (>75%) Animal protocol was approved by the institutional Animal Care and Use Committee (IACUC) at the University of Arkansas for Medical Sciences.

Results

1. Obese rats fed DHEA diet gained significantly less weight (P<0.001) and shows less liver steatosis (P<0.001) than control fed rats. Fifty-five percent (55%) of the control diet group developed mammary tumors, while no tumors were detected in the DHEA diet group (P<0.001). Our results suggest that DHEA treatment can reduce body weight gain and protects against liver steatosis caused by obesity. These data suggest that there might be a link between liver damage and breast cancer development. Supported by ARRI to RH.

References


Conclusion

Our results suggest that DHEA treatment can reduce body weight gain and protects against liver steatosis caused by obesity. These data suggest that there might be a link between liver damage and breast cancer development.

Acknowledgement

This project was supported by the Arkansas Bioscience Institute to RH.

Abstract

Obesity has been an epidemic in the United States for more than two decades, including breast cancer. Dehydroepiandrosterone (DHEA) is an over-the-counter dietary supplement used as an anti-cancer agent and anti-obesity supplement. The objectives of this study were to investigate the long-term effects of obesity and DHEA treatment on body weight gain and liver steatosis using 7,12-dimethylbenz(a)anthracene (DMBA)-induced mammary tumor model. Forty-three six-week-old obese female Zucker rats were used. Rats were randomly assigned and had ad libitum access to water and a diet of either chow (2016) as a control diet or chow with the addition of DHEA at a concentration of 6 g/kg as a DHEA diet. All rats were orally gavaged at age 50 days with 65 mg DMBA/kg body weight and were sacrificed 155 days post DMBA treatment. Livers were evaluated for presence of micro- and macrosteatosis, inflammatory infiltrates, and fibrosis. The percentage of liver cells showing fat accumulation was estimated. A score of 1 to 4 was given to each section, reflecting the relative degree of steatosis in hepatocytes. 1 (<25%), 2 (25%-50%), 3 (51%-75%), and 4 (>75%) Animal protocol was approved by the institutional Animal Care and Use Committee (IACUC) at the University of Arkansas for Medical Sciences.

Objective

The objectives of this study were to investigate the long-term effects of obesity and DHEA treatment on body weight gain and liver steatosis using 7,12-dimethylbenz(a)anthracene (DMBA)-induced mammary tumor model.

References


Conclusion

Our results suggest that DHEA treatment can reduce body weight gain and protects against liver steatosis caused by obesity. These data suggest that there might be a link between liver damage and breast cancer development.

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